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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/810,466	03/19/2001	Iichirou Inoue	3693-18	8980

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EXAMINER	
SCHECHTER, ANDREW M	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 11/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/810,466	INOUE ET AL.	
	Examiner	Art Unit	
	Andrew Schechter	2871	

-- Th MAILING DATE of this c mmunicatlon app ars on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 August 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *61-140* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *61-140* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 7/15/03 6/2/03
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 21 August 2003 have been fully considered but they are not persuasive.

Regarding *Maekawa*, the applicants argues that it has no internal scattering layer, but rather is of the surface-scattering type [p. 26-27]. This is not persuasive to the examiner. There are surface undulations in *Maekawa*, so it clearly has a scattering surface; it also has transparent particles throughout the resin, and discusses the possibility of leveling the surface of the anti-glare layer [col. 6, lines 46ff.], which implies that it has an internal scattering layer. It therefore appears to the examiner to meet the claim limitation that it is an "antiglare film [which] has an internal scattering layer and a scattering surface".

Information Disclosure Statement

2. The information disclosure statement filed 15 July 2003 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

U.S. Patent No. 6,483,561 has been considered, but JP 2822983 and Yamahara et al. 2002 were not, as no copies of these documents were provided to the examiner.

Claim Objections

3. Claim 131 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

The limitation of claim 131 is already recited in claim 121 from which it depends.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 121, 122, and 140 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Fujisawa et al.*, U.S. Patent No. 6,002,464 in view of *Yamahara et al.*, U.S. Patent No. 5,844,649.

Fujisawa discloses a liquid crystal display device comprising a liquid crystal cell [23], a pair of polarizers [24], an antiglare film [2, 3] provided on the viewer side of one of the polarizers, with an internal scattering layer [2] and a scattering surface [3], wherein the internal scattering layer includes a polymer matrix [resin, abstract] and dispersed particles [col. 3, lines 37-40], with a refractive difference which is significant to cause internal scattering [col. 3, lines 20-25].

Fujisawa does not explicitly disclose that the liquid crystal cell includes a pair of substrates and liquid crystal. This is either inherent, or if not, is taught by *Yamahara* for an analogous device. It would have been obvious to one of ordinary skill in the art at the time of the invention to have substrates and liquid crystal, motivated by the desire to have a way to contain the liquid crystal, mount electrodes, etc. Claim 121 is therefore unpatentable.

Fujisawa discloses the refractive index difference being from 0.01 to 0.12, overlapping the recited range in claim 122. In such cases, a *prima facie* case of obviousness exists [see MPEP 2144.05, in re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976)]. Claim 122 is therefore unpatentable.

The internal scattering layer and scattering surface of the antiglare film are defined in different layers, so claim 140 is also unpatentable.

6. Claims 121, 122, 125-131, and 136 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Yamahara et al.,* U.S. Patent No. 5,844,649 in view of *Maekawa,* U.S. Patent No. 6,164,785 in view of *Jones et al.,* U.S. Patent No. 5,949,506.

Yamahara discloses [see Fig. 1, for instance] a liquid crystal cell [1] with substrates and liquid crystal, and a pair of polarizers [4 and 5]. It does not explicitly disclose an antiglare layer.

Maekawa does disclose an antiglare layer [1] for use in an analogous device. The anti-glare layer [as discussed above, and see Fig. 1] has an internal scattering layer and a scattering surface, wherein the internal scattering layer includes a polymer matrix and particles dispersed therein [abstract]. It would have been obvious to one of

ordinary skill in the art at the time of the invention to use the antiglare layer of *Maekawa* on the viewer's side of the display device of *Yamahara,* motivated by *Maekawa's* teaching that it provides an antiglare film "which can maintain images clear and does not cause the scintillation of images" [see abstract] (and more simply, that it prevents glare as the name suggests when placed so).

Claim 121 also recites having a difference in refractive index between the particles and the polymer matrix to cause internal scattering. This could be taken as an inherent feature, since without the refractive index mismatch, there would be no anti-glare effect (which is there even if the anti-glaring layer were leveled so that there were no surface scattering anti-glare effect [col. 6, lines 46ff.].) Alternatively, *Jones* discloses an analogous diffusing layer and teaches that the difference in refractive particles should be preferably from about 0.05-0.15 [col. 6, lines 20-41]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use such a value, motivated by *Jones*'s teaching that this range "allows the beads or particles to transform the layer into a diffuser in an efficient and productive manner". Claim 121 is therefore unpatentable.

Maekawa discloses that the antiglare film is a single layer, but does not disclose the difference in refractive indices being between 0.03 and 0.10. *Jones'* range 0.05-0.15 overlaps with the claimed range; in such cases a *prima facie* case of obviousness exists [see MPEP 2144.05, in re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). Claim 122 is therefore unpatentable as well.

Also, the image clarity for *Maekawa's* anti-glare layer, measured using a 0.5 mm optical comb, is 59 [see Table 1], so claim 125 is unpatentable.

Yamahara discloses a twist orientation liquid crystal layer [TN], and the refractive index anisotropy is 0.092 [col. 7, line 42, this implicitly includes at 550 nm, the center of the visible light spectrum], so claims 126 and 127 are also unpatentable. *Yamahara* discloses a phase compensation element between the cell and one of the polarizers [see Figs. 3 and 4], so claim 128 is also unpatentable. The phase compensation element comprises a discotic liquid crystal in an inclines or hybrid orientation [col. 7, lines 46-53], so claim 129 is also unpatentable. The limitations of claims 130, 131, and 136 have already been discussed [see claims 121, 122, and 126], so claims 130, 131, and 136 are unpatentable.

7. Claims 61-93, 123, 124, 132-135, and 137-139 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Yamahara* in view of *Maekawa,* in view of *Jones*, as applied to claim 121 above, and further in view of *Etori et al,* U.S. Patent No. 6,348,960.

Maekawa does not appear to disclose the haze value of the anti-glare film. *Etori* discloses an analogous scattering layer and teaches that the haze should be "preferably 40% or more" [col. 5, lines 3-11] to obtain "paper-like whiteness". It would have been obvious to one of ordinary skill in the art at the time of the invention to use a haze value in this range, motivated by *Etori's* teaching (paper-like whiteness is a desirable display property). Claims 123 and 124 are therefore unpatentable.

Also, the image clarity for *Maekawa's* anti-glare layer, measured using a 0.5 mm optical comb, is 59 [see Table 1], so claim 132 is unpatentable.

Yamahara also discloses [col. 8, lines 13-24, see Fig. 3] the index ellipsoid with na, nb, and nc orthogonal, and that the phase compensation element has na=nc>nb, a-axis parallel to the plane, and b-axis inclined to the normal, so claims 133 and 134 are unpatentable. The b-zxis forms an angle between 15 and 75 degrees with the normal [col. 8, line 6] so claim 137 is unpatentable, and (na-nb)xd is between 80nm and 250nm [col. 8, lines 19-20], so claim 138 is unpatentable. The limitations of claims 135 and 139 have already been discussed [see claims 124 and 127], so claims 135 and 139 are unpatentable.

All the limitations of claims 61, 62, and 64-77 have been addressed above, so claims 61, 62, and 64-77 are unpatentable. Claim 63 recites the additional limitation that the liquid crystal is held in a matrix obtained by cross-linking an organic polymer, which is disclosed by *Yamahara* [col. 7, lines 50-53], so claim 63 is unpatentable. Claim 78 recites the additional limitation of first and second phase compensation elements on opposite sides of the liquid crystal layer, which is shown in *Yamahara*'s Fig. 4, so claim 78 is unpatentable.

All the limitations of claims 79 and 81-93 have been addressed above, so claims 79 and 81-93 are unpatentable. Claim 80 recites the additional limitation that the direction corresponding to na is substantially parallel to the layer plane of the liquid crystal, which is disclosed by *Yamahara* in Fig. 3, so claim 80 is unpatentable.

8. Claims 94-97, 104-107, 108-110, and 117-120 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Abileah* et al., U.S. Patent No. 5,629,784 in view of *Yamahara et al.,* U.S. Patent No. 5,844,649.

Abileah discloses a liquid crystal display device comprising a liquid crystal cell with substrates [5, 13], liquid crystal [9], a pair of polarizers [3, 15], an antiglare layer [21] provided on the viewer side of one of the polarizers, wherein the anti-glare layer suppresses coloration at a viewing angle of 50° and 60° [col. 18, lines 13-21: "...the maintaining of little or no color shifting in display as viewing angles increase is a highly desired result in the industry. This allows viewers at both normal and, for example, 60° to see substantially the same colors at particular points on the display panel... this display including BEF 17 and diffuser 21 maintained the uniformity of color over an extremely wide range of viewing angles"].

Abileah does not appear to explicitly disclose that the chromaticity (x,y) has $x \leq 0.3581$ and $y \leq 0.3675$ at 50° or $x \leq 0.3647$ and $y \leq 0.3650$ at 60° while at the same time a white image is displayed at a normal viewing angle. However, these claim limitations are simply a quantitative expression of the statement that the color remains uniformly white when viewed at 0° and at 50° or 60°, which *Abileah* does disclose. Chromaticity values outside these cited ranges fail to appear white: the applicant's specification states that the human eye can detect changes of 0.005 in the x or y values [p. 30], and the closest to white sample [Table 6] shows x=0.3512, y=0.3579. Thus chromaticities at the edge of the recited ranges (x=0.3581 and y=0.3675 at 50° or x=0.3647 and y=0.3650 at 60°) will show a color shift from white to the human eye. Since *Abileah* discloses that uniformity of color is maintained, and uses the same diffuser/antiglare layer technology to accomplish this, there is substantial reason to believe that *Abileah*'s device satisfies the recited limitations.

Even assuming that it did not, it would have been obvious to one of ordinary skill in the art at the time of the invention to have it do so. *Abileah*'s statement that the "elimination of such color shifting is clearly a desired result in all modern AMLCDs" [col. 17, lines 50-51] indicates that the off-normal chromaticity is a result-effective variable whose optimization would have been obvious to one of ordinary skill in the art. *Abileah* indicates that using a diffuser [anti-glare layer] to maintain "the uniformity of color over an extremely wide range of viewing angles" [col. 18, lines 19-21] was known, so it would have been obvious to use this technique to decrease the off-normal color shift as much as possible, namely until it is within the recited range of chromaticities and the human eye cannot detect a color shift.

Abileah does not disclose a phase compensation element between the liquid crystal cell and one of the polarizers. *Yamahara* disclose a phase compensation element between the liquid crystal cell and one of the polarizers, and it would have been obvious to one of ordinary skill in the art at the time of the invention to use this compensation film in *Abileah*, motivated by *Yamahara's* teaching that "since biased optical characteristics are properly compensated, viewing-angle characteristics in the case of inclined viewing angles can be improved" [see abstract]. Claims 94, 95, and 108 are therefore unpatentable.

Yamahara's compensation plate satisfies the limitations of claims 96, 97, 104-106, 109, 110, and 117-119, so claims 96, 97, 104-106, 109, 110, and 117-119 are unpatentable.

The liquid crystal in *Abileah* is twisted nematic, so claims 107 and 120 are unpatentable.

9. Claims 98, 99, 102, 111, 112, and 115 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Abileah* and *Yamahara* as applied to claims 94 and 108 above, and further in view of *Maekawa,* U.S. Patent No. 6,164,785.

Abileah does not explicitly disclose details of its diffusion (antiglare) layer. *Maekawa* does disclose a diffusion (anti-glare) layer which satisfies the limitations of claims 98, 99, 102, 111, 112, and 115. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the antiglare layer of *Maekawa*, motivated by *Maekawa's* teaching that it provides an antiglare film "which can maintain images clear and does not cause scintillation of images [see abstract] (and more simply, that it prevents glare as the name suggests). Claims 98, 99, 102, 111, 112, and 115 are therefore unpatentable.

10. Claims 100, 101, 113, and 114 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Abileah*, *Yamahara*, and *Maekawa,* and further in view of *Etori*, U.S. Patent No. 6,348,960.

Maekawa does not appear to disclose the haze value of the anti-glare film. *Etori* discloses an analogous scattering layer and teaches that the haze should be "preferably 40% or more" [col. 5, lines 3-11] to obtain "paper-like whiteness". It would have been obvious to one of ordinary skill in the art at the time of the invention to use a haze value in this range, motivated by *Etori's* teaching (paper-like whiteness is a desirable display property). Claims 100, 101, 113, and 114 are therefore unpatentable.

11. Claims 103 and 116 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Abileah* and *Yamahara* as applied to claims 94 and 108, and further in view of *Yamahara et al.,* U.S. Patent No. 5,844,649.

Abileah does not disclose the value of the refractive index anisotropy for the liquid crystal. *Yamahara* discloses using liquid crystal which has anisotropy of 0.092 for an analogous device, and it would have been obvious to one of ordinary skill in the art at the time of the invention to use a liquid crystal having such an anisotropy, motivated by *Yamahara's* example of successfully using this value, particularly in combination with the compensation plate (which compensates for the liquid crystal's anisotropy) which is being combined with *Abileah*'s device. Claims 103 and 116 are therefore unpatentable.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (703) 306-5801. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (703) 305-3492. The fax phone number for the organization where this application or proceeding is assigned is (703) 746-4711.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Andrew Schechter
11 November 2003